

## SHORT STUDIES IN THE MALACHIIDAE (COLEOPTERA)

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The types of all new species described in the following pages are males, and, unless otherwise stated, all are in the collection of the writer.

### **TANAOPS** LeConte

This genus was established by LeConte, in 1859, for two California species—*abdominalis* and *longiceps*—the latter having been described seven years previously as a *Malachius*. Both LeConte, at this time, and Horn, in his later Synopsis of the Malachiidae (1872), note certain epistomal and ventral differences in these two species, but a careful examination of the types, together with the more extensive material in my own cabinet, convinces me that the supposed differences are wholly non-existent. The epistomal structure in *abdominalis* and *longiceps* is virtually identical, being seemingly membranous in front, becoming corneous posteriorly; while the ventral pits or impressions in the males do not differ appreciably in the two species. Moreover these characters are practically constant in all the new species to be herein described.

The two most important generic characters of *Tanaops* are sexual in nature. In the male the basal two joints of the front tarsi are a little enlarged, the second produced a short distance over the third, but not lobed as in *Attalus*; while the fourth and fifth ventrals are bifoveate. The sixth segment is also impressed and emarginate but the structure is frequently not clearly visible. The pits or excavations of the fourth and fifth segments are more or less transverse and subcontiguous on the median line, and in one species—*coelestinus*—they coalesce into a single large pit on each of these segments. None of our true *Attalus* already described have the male ventral pits, but one or two undescribed species in my collection, which by the lobed second joint of the male front tarsi must be referred to *Attalus*, show also the male ventral pits in a somewhat modified form. The very elongate head in the two species known to LeConte was

regarded by him as a good generic character, but this gradually fails in the larger number of species now known. Throughout the genus there is a considerable degree of uniformity in many structural and color characters, which will accordingly receive scant attention in the short descriptions which follow. The margins of the ventral segments, and also the median line anteriorly, is always membranous and pale in color; the color, as given in the descriptions, should be understood as applying only to the corneous portions of the abdomen. Length is measured from the anterior margin of the prothorax to the tips of the elytra.

### *Table of Species*

Antennae more strongly serrate, the outer edge of the intermediate joints more or less sinuate in the male.

Side margins of elytra pale throughout.

Abdomen (♀) red, last segment black, (♂) black; head extremely elongate ..... **angusticeps**

Abdomen red (except last segment) in both sexes; head somewhat less elongate.

Prothorax entirely or in great part red, elytra red with black vitta, sometimes interrupted at middle, sometimes broad, leaving the suture—except at base—tip and side margins narrowly red; antennae longer and more strongly serrate ..... **abdominalis**

Prothorax black, elytra red with black scutellar spot; antennae shorter and less strongly serrate ..... **ignitus**

Side margins of elytra not pale, the apical pale margin sometimes confined to the tip, sometimes extending forward along the suture.

Elytra finely, not very sparsely punctate, surface rather dull; antennae slender, the joints more elongate than in any other known species.

**antennatus**

Elytra finely, very sparsely punctate, strongly shining, antennae less slender ..... **longiceps**

Antennae less strongly serrate, the outer edge of the intermediate joints straight or virtually so.

Front coxae spined in the male, abdomen yellow (♂) or black (♀). **spinifer**

Front coxae of male without spine.

Head more or less conspicuously elongate, much narrower than the thorax; elytra black, the tips alone paler, the pale color not or but slightly extending forward along the suture.

Head and prothorax more strongly elongate, the latter not distinctly wider than long (at least in the male), sides less rounded, entirely black ..... **terminalis**

Head and prothorax less elongate, the latter with more strongly rounded sides, red with median black space ..... **dubitans**

Head not conspicuously elongate, elytra entirely blue or greenish, without pale tips.

Ventral segments entirely reddish yellow—at least in the male. **mimus**

Ventral segments in great part black in both sexes.

Prothorax less transverse, sides less strongly rounded, color normally black with a small reddish spot at the hind angles, rarely entirely black or with the sides entirely red; fourth and fifth ventrals of male with a single deep fovea on each ..... **coelestinus**

Prothorax more transverse, sides strongly rounded, color entirely red; fourth and fifth ventrals of the male conspicuously impressed anterior to the usual foveae..... **complex**

Head nearly as wide as the thorax, elytra red with common scutellar spot and subapical spot on each, black..... **repens**

### **Tanaops angusticeps** new species

Moderately elongate, elytra widened behind; black, elytra faintly greenish, the side margins, apex and suture behind the middle reddish yellow. Head very elongate, the width behind the eyes scarcely or but little greater than half the width of the thorax; black, epistoma anteriorly testaceous, subimpunctate, shining. Antennae black, basal two or three joints pale beneath, much longer and distinctly serrate in the male, joints five to ten with the outer or oblique edge sinuate; in the female scarcely serrate, the oblique edges of the joints not sinuate. Prothorax entirely black, polished and subimpunctate, a little wider than long, sides feebly arcuate, subparallel or slightly divergent posteriorly, angles all rounded. Elytra less shining, surface slightly uneven, finely not closely punctulate. Body beneath largely black in the male, the abdomen in the female yellow with the last segment, and occasionally the preceding in part, black. Legs black, tibiae and tarsi sometimes brownish, trochanters often more or less pale. Length 3 to 4 mm.

California: Yosemite, June and July, three males, four females.

In this species the head is more narrowly elongate than in any other known to me. The male seems to fit very closely the description of Motschulsky's *Cephalistes apicalis*, which Horn has placed as a synonym of LeConte's *longiceps*. Without actual comparison of types it is now impossible to say just what *apicalis* is; for the present therefore it is best to accept the synonymy as stated by Horn.

**Tanaops abdominalis** LeConte, Proc. Acad. Nat. Sci. Phila., 1859, p. 74.

Rufo-testaceous, head in great part black, prothorax with or without a median black vitta; elytra each with a broad black or greenish black vitta, often narrowed or interrupted at middle, the side margins, tip and suture nearly to the base, pale; surface rather strongly shining throughout. Head less elongate than in the preceding species, fully three-fourths as wide behind the eyes as the prothorax, black with the epistoma more or less pale, the pale color sometimes extending on the front. Antennae black, more or less pale at base, distinctly stouter than in *angusticeps*, longer and more serrate in the male as usual. Prothorax somewhat wider than long, highly polished, subimpunctate, slightly narrowed in front, typically with a wide, black, median stripe,

which is more often entirely lacking. Elytra nearly as shining as the prothorax, finely, sparsely punctate, the surface as usual a little uneven. Body beneath rufo-testaceous except the metasternum, and in the female the last ventral segment. Legs black, often more or less pale at base. Length 3 to 3.5 mm.

California. Type from Ft. Tejon. The series before me includes five males and five females from Pomona and Pasadena. A common species in Southern California.

**Tanaops ignitus** new species

Head and prothorax black, elytra red with black scutellar spot, sterna black, abdomen entirely red in the male, the last segment black in the female. Head about two-thirds as wide as the thorax in the male, somewhat narrower in the female. Antennae moderately serrate in the male, distinctly shorter and less stout than in *abdominalis*; in the female scarcely serrate and scarcely reaching the base of the thorax when the head is extended. Thorax varying from distinctly wider than long to about as wide as long, sides rather feebly curved. Legs black, with the trochanters more or less pale, the tibiae and tarsi sometimes brownish. Length 2.6 to 3 mm.

California: Raymond, May, (Fenyès). Oregon: Huntington, (Wickham).

In the typical series from Raymond, California, the thorax is entirely black. In the single Oregon specimen—a male—the sides and base are narrowly pale, and the pale areas throughout are yellow rather than red. This species is unique in its coloration.

**Tanaops antennatus** new species

Head black, epistoma pale; thorax red with median black stripe, elytra black with greenish luster, tips and suture to middle red; below reddish yellow, sides of metasternum black, fourth and fifth ventrals dusky; legs black, trochanters and base of front femora pale. Head (♂) three-fourths as wide as the thorax. Antennae serrate, the joints unusually elongate, joints seven to nine times as long as wide, tenth more than twice as long as wide. Thorax evidently wider than long, slightly wider behind, sides moderately arcuate. Elytra not very shining, finely, rather closely punctulate and sparsely, minutely sub-tuberculate; pale prostrate pubescence rather conspicuous. Length 2.8 mm.

Southern California: A single male specimen from Mt. Lowe.

The very elongate antennal joints constitute the chief distinguishing character of this species.

**Tanaops longiceps** LeConte, Proc. Acad. Nat. Sci. Phila., 1852, p. 165.

Black, strongly shining, thorax with the sides broadly pale in the type, more often entirely black or with the hind angles alone pale. Elytra with the apex

rufous, the suture sometimes pale in apical half. Head behind the eyes in the male three-fourths as wide as the thorax. Antennae moderately strongly serrate in the male. Thorax a little transverse, sides feebly areuate at middle, scarcely widened basally. Elytra minutely, sparsely punctulate, the decumbent pubescence thin. Body beneath black, the margins and membranous median portions of the ventral segments pale as usual. Length 3 mm.

California: San Diego (type); La Jolla; Laguna Beach.

A specimen before me from La Jolla (near San Diego) is precisely like some examples in the type series at Cambridge. The epistomal and ventral differences between this species and *abdominalis* recorded by LeConte and Horn, have no basis in fact and must have been due to inaccurate observation.

**Tanaops spinifer** new species

Black, elytra with greenish luster, epistoma and under side of the basal three joints of the antennae pale, as usual; thorax with sides more or less pale, typically and commonly with the hind angles alone paler, quite as often entirely black; elytra with the tips narrowly pale, the pale color sometimes extending forward along the suture. Head behind the eyes about three-fifths as wide as the thorax in the female, a little wider in the male. Antennae moderately serrate in the male, much shorter and feebly so in the female. Thorax slightly wider than long, sides rather straight, surface polished and subimpunctate. Elytra less shining, surface a little uneven, pale recumbent pubescence distinct, punctuation sparse and fine. Body beneath black in the female, the abdomen pale in the male, with sides of first two ventrals blackish. Legs black, with trochanters and often base of front femora, pale. Front trochanters of male with an acute spine. Length 3 to 3.5 mm.

Arizona: "S. Arizona, Aug.," and "Oak Creek, 6000 ft. Aug.," (Snow); Williams, (Fenyès).

Two males and six females are before me. The type is a male labeled simply "Ariz. Aug." It is I believe from Southern Arizona. At once distinguishable from all other species known to us by the spined front trochanters of the male.

**Tanaops terminalis** new species

Black, the elytra with greenish luster, strongly shining throughout, elytral tips narrowly red, abdomen black in both sexes. Head elongate, about three-fifths as wide behind the eyes as the thorax in the female, a little wider in the male. Antennae moderately serrate in the male, not serrate in the female. Thorax slightly to scarcely wider than long, slightly but obviously widened behind, subimpunctate. Elytra sparsely, finely punctulate. Length 3.2 to 3.5 mm.

California: Lake Tahoe and Truckee, one male and four females.



The type is a male taken at Truckee by Wickham. The females were all taken by the writer at Lake Tahoe. In none of the specimens does the red color of the elytral tips show any tendency to extend forward along the suture.

**Tanaops dubitans** new species

Very similar to the last. The head seems to be a little less elongate and the thorax is obviously more transverse, and is broadly red at sides. The abdomen is more reddish at base, the basal segment being entirely red in the male, and blackish at sides only in the female; second segment dusky at sides in the male. It is possible these differences may disappear in a larger series.

California: Sylvania, Sonoma County. One pair sent me many years ago as *longiceps* by Mr. Ricksecker.

**Tanaops mimus** new species

Moderately elongate, shining, finely, rather sparsely pale pubescent and nigro-setose, finely, sparsely punctulate throughout. Head black, mouth pale; thorax rufo-testaceous with variable and irregular discal blackish cloud, which may be entirely wanting. Elytra entirely dark greenish bronze. Body beneath and legs, black, abdomen entirely yellow in the male, in the female yellow with terminal segment black, or varied with black throughout. Antennae black, pale at base, fully half as long as the body and narrowly serrate in the male, with all joints elongate, the outer ones twice as long as wide; a little shorter and less serrate in the female. Head about as long as wide, a little narrower than the thorax, the latter a little wider than long, the sides broadly arcuate, nearly straight and parallel at middle. Elytra gradually widened behind, surface with little irregularities which give the appearance of being finely tuberculate. Length 2.5 to 3 mm.

Utah: Nephi (type ♂), collected by Wickham. Colorado: Glenwood Springs, (Fenyès).

Very similar in appearance to *Attalus nigripes* Horn, which name had been attached to my specimens. The latter is, however, entirely black beneath and is supposedly a true *Attalus*.

**Tanaops coelestinus** Gorham, Biol. Centr.-Amer., Coleopt., iii, 2, p. 320, (1886).

Black, moderately shining, elytra with distinct bluish or greenish luster, thorax typically with a reddish spot at the hind angles, often entirely black, more rarely with sides red. Head moderately wide. Antennae not strongly serrate in the male, feebly so in the female. Thorax a little wider than long, not widened behind, sides rather straight. Elytra with the usual vestiture, sparsely, finely punctulate and minutely, sparsely tuberculate. Abdomen black in the female; in the male the fourth and fifth segments are predominantly yellow, the fourth more or less blackish at sides. Legs black, front and middle trochanters pale, front thighs sometimes pale beneath. Length 2.75 to 3 mm.

Arizona: Williams; Santa Rita Mountains; Chiricahua Mountains. Northern Mexico.

This species differs from all others known to me in the complete coalescence of the ventral pits of the fourth and fifth segments in the male. In all other species, the two foveae on each of the two segments mentioned are more or less completely separated by the membranous or semi-membranous median portion of the segment, which is frequently elevated in a cariniform manner in the dried specimens. In *coelestinus* there is a single transverse polished corneous fovea on each of these segments.

Mr. Champion in his recent Revision of the Mexican and Central American Malachiidae, retains this species in *Attalus*, but does not fail to note that the second joint of the anterior male tarsus of this species, and also of *A. mexicanus*, is not lobed, and remarks that they must come close to *Tanaops*. He seems, however, not to have noticed the ventral foveae of the male, a character pointing with considerable certainty to *Tanaops*. Champion mentions having seen one specimen of *coelestinus* with entirely red thorax.

***Tanaops complex* new species**

Head black, margin of epistoma pale, prothorax entirely red, elytra blue green; body beneath black, the fourth ventral in the male red, with median black foveae; upper surface shining, the elytra less so because of the rather plentiful, pale, recumbent pubescence. Head not conspicuously elongate. Antennae moderately stout and serrate in the male, shorter, narrower and scarcely serrate in the female as usual. Prothorax distinctly transverse, sides strongly rounded, surface sparsely, minutely punctulate. Elytra finely, minutely punctulate and sub-tuberculate. Legs black, the trochanters and front thighs more or less pale, especially in the male. Fourth and fifth ventrals of male with the usual median foveae near the hind margins small and dull, and anterior to these on each segment two larger, shining, rather deep impressions, which are confluent at middle. Length 3 to 3.25 mm.

Arizona: Santa Rita Mountains, 8000 feet. A single pair communicated by the late Prof. Snow.

***Tanaops repens* new species**

Red, strongly shining, posterior half of head, black, a common basal spot and an elongate subapical spot on each elytron greenish black; antennae, sides of metasternum, legs in part, the sixth ventral and sides of the fifth, black. Head about four-fifths as wide as the thorax, numerous, finely punctulate.

Antennae ( $\sigma^7$ ) long and stout, moderately serrate, basal three joints pale beneath. Prothorax transversely, broadly oval, minutely, very sparsely punctulate. Elytra ( $\sigma^7$ ) but little widened behind, finely punctulate and with the usual vestiture. Body beneath pale red, the legs black, the trochanters and base of front and middle femora pale, tarsi and tips of tibiae brownish. Length, 3.25 mm.

California: Havilah. A single male collected by G. R. Pilate.

This species strongly resembles in color certain specimens of *abdominalis*, but is at once separable, by the tabular characters. It is also very similar in color to several species of *Attalus*.

### MICROLIPUS LeConte

The genus *Microlipus* contains a few slender *Malachius*-like species of Coleoptera, which are, with a single exception, members of the extreme West Coast fauna. They are not overly abundant in collections and there are few references to them in the books. A critical examination of the material in my own cabinet and that of Dr. Fenyès reveals the presence of three apparently distinct forms allied to *laticeps*, and with the description of these it has been thought well to present a synoptic table, together with brief references to all the known species, followed by some observations concerning the standing of the genus itself.

#### Table of Species

Elytra not appendiculate in the male, both sexes winged; pronotum as viewed in profile not conspicuously reflexo-explanate posteriorly, and scarcely more so than in front.

Antennae pectinate in the male. . . . . **prolixicornis**

Antennae not pectinate in the male.

Prothorax smooth and shining, distinctly wider than long. . . **laevicollis**

Prothorax punctulate and more or less finely alutaceous, less shining.

Antennae of male as long as the entire body, dorsal cloud of pronotum small or obsolescent. . . . . **productus**

Antennae of male much shorter, one-half to three-fourths the length of the body, pronotum with broad dorsal dark stripe or with the margins alone narrowly pale.

Prothorax, at least in the male, as long as wide or very nearly so, pale margins narrow.

Elytra distinctly inflated posteriorly in the female; head, including the eyes, scarcely wider in the male than the prothorax, pale side margins of the latter very narrow, sometimes merely vestigial.

**franciscanus**



Elytra not or only very slightly inflated posteriorly in the female; head in the male evidently wider than the prothorax, the pale lateral margins of the latter better developed, especially at the front angles . . . . . **laticeps**

Prothorax distinctly wider than long in both sexes, sides broadly pale . . . . . **aequalis**

Elytra appendiculate in the male, the appendix more or less testaceous in color; females apterous; the elytra strongly inflated posteriorly, unicolorous; pronotum as viewed in profile rather strongly, broadly reflexo-explanate posteriorly.

Pronotum with sides broadly rufo-testaceous, apical half of tibiae and base of tarsi testaceous—at least in the male. . . . . **longicollis**

Pronotum with hind angles only narrowly pale, legs dark throughout.

**moerens**

**Microlipus prolixicornis** Fall (*Malachius*). Occ. Pap. Cal. Acad. Sci., viii, 1901, p. 246.

This species is conspicuously distinct from all others of the genus by its strongly pectinate male antennae, which are fully as long as the entire body. In the female the antennae are moderately serrate and scarcely attain the middle of the elytra. The form is slender, color piceous bronzed, thorax with yellow margins of variable width. Thorax sinuately narrowed behind, all the angles rounded. Elytra not appendiculate, but with yellow tips in both sexes. Length 3.3 to 3.6. mm.

California: Pasadena.

**Microlipus laevicollis** Horn, Trans. Am. Ent. Soc., iv, 1872, p. 116.

This species is unknown to me in nature. It was described by Horn from a unique male specimen from Nebraska in the Ulke collection, and I do not know if it has been duplicated. It may be known from all our other species by the smooth and shining head and prothorax, the latter—according to Horn—proportionately broader than in any other species known to him. The entire lack of testaceous margin to the prothorax seems also to be a unique character among the species with non-appendiculate elytra. *Laevicollis* is the only species of the genus known from the interior of the continent, all others being confined to the true Pacific Coast fauna: an interesting condition which is exactly paralleled in the very closely related (if really generically distinct) *Malachius*, all the native species of which are members of the Pacific Coast fauna, with the single exception of *ulkei*, described from Dakota.

***Microlipus productus*** new species

Form elongate, parallel in the male, elytra gradually a little widened posteriorly in the female; aeneo-piceous, mouth and sides of front below the antennae, the basal two joints of the latter in part, the prothorax except for a variably developed dorsal cloud, elytral tips, coxae, trochanters, and hind margins of ventral segments, rufo-testaceous; tibiae and tarsi picco-testaceous in some examples, scarcely paler in others. Head ( $\sigma$ ) slightly wider than the prothorax, front with a moderately deep, transverse impression, surface very finely alutaceous and sparsely, minutely punctate. Antennae ( $\sigma$ ) as long as the entire body or very nearly so, joints four to eleven four to five times as long as wide, the intermediate ones dilated apically and forming a well marked subacute apical angle, giving a subserrate appearance. In the female the antennae are scarcely two-thirds as long as the body, the intermediate joints more gradually dilated apically, with obtuse angles. Prothorax as long as wide, just perceptibly narrowed posteriorly, surface more distinctly alutaceous than the head, punctuation similarly fine and sparse, color in great part yellow (entirely so in the single female at hand), the dorsal stripe small and imperfect, attaining neither base nor apex. Elytra slightly wider at base than the prothorax, very little dilated apically in the male, and but little more so in the female; surface finely subrugulose, finely, indistinctly punctate, tips narrowly rufous in both sexes. Body beneath and legs as usual in the genus. Length 3.5 to 3.8 mm.

Southern California. Described from five males and four females taken in the mountains above Claremont, (Baker), at Pasadena and Sierra Madre, (Fenyess), and on Mt. Wilson, June 14, by myself. The type is a Claremont male.

***Microlipus franciscanus*** new species

Form slender, nearly parallel in the male, the elytra gradually widened to apex in the female. Head and prothorax distinctly alutaceous and feebly shining, greenish black, elytra aeneo-piceous and dull in the male, greenish black and distinctly shining in the female. Prothorax with very narrow testaceous side margins, which are usually slightly widened at the base angles and continued very narrowly around the basal edge. Mouth, under side of the basal four or five joints of the antennae, tips of elytra in both sexes, the coxae and trochanters (especially in the male), rufo-testaceous. Head across the eyes scarcely wider than the prothorax. Antennae not serrate, a little longer than half the body in the male, and less than half as long as the body in the female; joints five to ten from two to three times as long as wide, the outer ones gradually more slender. Prothorax barely as long as wide, feebly but perceptibly narrowed posteriorly. Elytra finely subrugulose and dull in the male, distinctly smoother and more shining in the female. Body beneath and legs as usual, the tibiae and tarsi more or less paler, rufo-piceous. Length 3 to 3.8 mm.

Middle California Coast region.

The series before me consists of two males and ten females from Berkeley (type ♂), Belmont, Monterey, Point Reyes, Pacific Grove and Lagunitas.

This species is closely related to *laticeps* and doubtless so stands in collections. To the characters given in the table for their distinction there may be added—antennae subserrate in the male of *laticeps*, scarcely at all so in *franciscanus*; legs largely pale in male *laticeps*, almost entirely dark in *franciscanus*; the pale margin of the prothorax, though narrow, is as a rule wider in *laticeps* and is entire, while in *franciscanus* it completely or virtually disappears for a greater or less distance along the front margin, and in several examples exists only along the extreme edge about the basal angles. In the second male of my series (Monterey) the pale color at the tips of the elytra is reduced almost to the vanishing point, while in a Monterey female in Dr. Fenyès' collection and in my single male of *laticeps* it is entirely lost.

***Microlipus laticeps*** LeConte, Proc. Acad. Nat. Sci. Phila., 1852, p. 168.

This species, the type of the genus *Microlipus* and the first to be made known, was described in 1852 from San Diego specimens. LeConte's description is not now accessible to me, but Horn in his Synopsis of the Malachiidae in 1872 remarks that all known specimens are males. This, however, is not true, the specimen on the name label—evidently one of the original series—being a female. I have almost exactly similar females from San Diego, and with them associate without hesitation a male from Long Beach, about ninety miles farther up the coast. This species, I suspect, is confined to the Southern California Coast region, being replaced by the closely allied but apparently distinct *franciscanus* in the Middle Coast region. For differences observed between these two, in addition to those of the table, see remarks under *franciscanus*.

***Microlipus aequalis*** new species

Aeneo-piceous, prothorax rufo-testaceous with broad median piceous stripe, which does not quite reach either the basal or apical margins; legs largely pale in color, the apical half of the femora piceous, the tibiae dusky; mouth and tips of elytra pale. Antennae fully two-thirds as long as the body in the male, not appreciably serrate, rather less than half as long as the body in the female, piceous with the underside of basal four joints pale in both sexes. Head not appreciably wider than the prothorax in the male, the latter wider than long

and evenly rounded at sides in both sexes. Elytra nearly parallel, slightly wider than the prothorax. Sculpture and pubescence as usual. Length 2.9 to 3.2 mm.

A single pair beaten from live oak at Pasadena, California, in April.

If the characters embodied in these two specimens prove constant, the species is peculiar in that aside from the difference in the length of the antennae, there are no appreciable sexual differences either in color or bodily form. The general appearance is strikingly like that of the female of *laticeps*, except for the darker prothorax of the latter.

***Microlipus longicollis*** Motschulsky, Bull. Soc. Imp. Nat. Mosc., 1859, p. 405.

On comparison some years ago, a male specimen from Pasadena, California, seemed identical with an example of this species in the LeConte collection sent by Motschulsky. Horn says, "thorax longer than wide"; Motschulsky used the expression "thorace subelongato." I did not take measurements of the LeConte example, but in the series at hand the length of the thorax varies from a trifle less to slightly greater than the width, the variation being quite independent of sex. This species is rather closely related to the next, but may probably be separated with certainty by the broadly rufous sides of the prothorax. The elytra vary in color from aeneo-piceous to bluish or greenish. The series at hand consists of four males and twelve females, all collected by Dr. Fenyès in California, and bearing locality labels—Santa Monica, Redondo, Catalina Island, Pasadena and Sugar Pine (Yosemite region). Motschulsky's type was said to be from "Nova Helvetia," a locality which I am at present unable to interpret, but Horn gives simply California.

***Microlipus moerens*** LeConte, Proc. Acad. Sci. Phila., 1859, p. 283.

This species and the preceding—as indicated in the table—are readily separated from all others by the elytra being appendiculate in the male, and not tipped with yellow in the female.

The color in the present species is greenish black with the margins of the prothorax very narrowly rufous at the hind angles only. In one example from Sonoma County, California, the pale color at the hind angles of the prothorax is wanting, the specimen agreeing throughout with the description of Motschulsky's *uniformis*, which I have no doubt belongs here, rather than

with *laticeps* as was suggested by Horn. Both LeConte's and Motschulsky's papers bear the date 1859, and I have no means of ascertaining which appeared first, *moerens*, however, takes page precedence over *uniformis*. In the three males and four females before me the prothorax varies from as wide as long to a little longer than wide. As a rule it averages somewhat narrower than in *longicollis*, a condition which is just the reverse of the statements made in Horn's table, but doubtless specimens of *moerens* will occur with the width a little in excess of the length, just as in *longicollis*.

*Moerens* was described from Point Reyes, about thirty miles north of San Francisco. Most of the examples at hand were collected by Dr. Fenyès at Pacific Grove, a somewhat greater distance south of San Francisco. The Sonoma specimen was collected by Ricksecker.

The characters given for the generic separation of the Malachiini in the LeConte and Horn Classification (1883) are precisely those given by Horn in his Synopsis of eleven years before. *Malachius* and *Microlipus* are here separated as follows.

Antennae inserted on the front nearly between the eyes... **Malachius**

Antennae inserted at anterior edge of front near the sides... **Microlipus**

This sounds like an important and satisfactory distinction, but investigation proves it to be very far from such, at least so far as our representatives of the two genera are concerned. In all cases the antennae are inserted near the anterior margin of the front, their distance apart being rather more than twice their distance from the eyes, the thickened edge of the antennal pits contiguous to the epistomal suture. It is possible that the antennae are more frontal in position in the European species of *Malachius* than in ours, in fact in *M. aeneus*, our only introduced species, they do appear to be a trifle more removed from the frontal margin, but this seems due rather to a greater thickening of the raised edge of the antennal pits than to any real difference in position. Following the descriptions of the four known species of *Microlipus*, Horn states further that this genus resembles *Malachius* in form and general aspect, but the species are more slender, the legs longer and the antennae are scarcely serrate, and adds that the sexual characters serve as a means of readily separating *Microlipus* from all the other genera of the tribe in our



fauna. Taking these points up seriatim—it is true that the form is more slender in *Microlipus* than in any of the species of *Malachius* known to Horn at the time of writing, but several quite as slender species of *Malachius* have since been described. I am unable to discover any difference of moment in the length of the legs. The antennal formation varies much in *Malachius*, and while usually distinctly serrate or even pectinate in the males, in one species—*pristinus*—which in general make-up is a good *Malachius*, the antennae are very feebly serrate, even less so than in the new *Microlipus productus*. On the other hand *prolixicornis*, which agrees in narrow form and notably in the peculiar posteriorly narrowed thorax existing in several (not all) species of *Microlipus*, has strongly pectinate male antennae and was for this reason originally described by me as a *Malachius*. As to sexual characters, Horn mentions elytra both appendiculate and not in the male, which is quite as true of *Malachius*; “front tarsi of male stouter than in the female” in *Microlipus*, which is not really true; and “elytra apterous in the females,” which is true of the two species of which females were recognized by Horn but is not true of the other two, one of which—*laticeps*—is the type of the genus. Other male characters, such as the longer, stouter, more pilose antennae, the generally more parallel form, certain differences in color, and the deeply fissured last ventral are also more or less common to the two genera. No species of *Malachius*, so far as I am aware, has apterous females, and this character together with the completely non-serrate antennae, which are somewhat thicker in the male but not otherwise sexually modified, together with the somewhat peculiar form of the prothorax, which is also independent of sex, may perhaps serve to separate *moerens* and *longicollis* generically from the other species now recorded under *Microlipus*, all of which seem referable to *Malachius* as we now understand it. In this connection it is proper to say that presence or absence of wings is not generally held to be in itself a generic character, an instance of which is not far to seek in the nearby genus *Collops*. If, however, it should seem best to separate *moerens* and *longicollis* on the characters above mentioned, a new name would have to be proposed, the type of *Microlipus* being as above remarked not separable from *Malachius*. I am not prepared at the present time to carry out this



suggestion, but content myself with presenting the facts as I now see them, pending a fuller knowledge of the European species of *Malachius* and allied genera.

### ATTALUS Erichson

The nondescript forms in this genus in our collections are very numerous, and a complete revision is much to be desired. This should not be so very difficult to one who has accumulated the necessary material, but there may be some puzzling relationships to solve—especially in the vicinity of *rufomarginatus* and *lecontei* (*basalis* LeConte). At the risk of further complicating matters the following descriptions of twelve of the new species in my own cabinet are presented. They seem to be abundantly distinct from any of our previously described forms, nor am I able to identify any of them by Mr. Champion's recent paper on the Mexican and Central American species. I am not yet prepared to give a revised table of *Attalus*, but the new species here made known may be separated among themselves as follows.

#### Table of Species

- |   |                       |
|---|-----------------------|
| 1. Elytra entirely black.....   | 3                     |
| Elytra not entirely black.....  | 2                     |
| 2. Elytra rufo-testaceous, each with subapical and sometimes basal spot, black.                   |                       |
| <b>serraticornis</b>  |                       |
| Elytra black in apical half, basal half yellow.....   | <b>dimidiatus</b>     |
| Elytra black with tips red; head and thorax red.....  | <b>semirubidus</b>    |
| Elytra black with side margins, tips, and suture (except basally) rufo-testaceous.....            | <b>demissus</b>       |
| Elytra black with side margins and suture very narrowly and indefinitely paler—tips not pale..... | <b>dilutimargo</b>    |
| Elytra black with very narrow yellow lateral and apical margins, head tuberculate.....            | <b>tuberculifrons</b> |
| 3. Head and thorax rufo-testaceous.....   | <b>atripennis</b>     |
| Head, at least, and generally the thorax largely black.....                                       | 4                     |
| 4. Upper surface nearly glabrous.....   | <b>glabrellus</b>     |
| Upper surface distinctly pubescent.....   | 5                     |
| 5. Last dorsal segment of the abdomen notched at tip, male with ventral foveae.....               | 6                     |
| Last dorsal segment not notched, male without ventral foveae.....                                 | 7                     |
| 6. Antennae (♂) narrowly serrate, fifth ventral of male foveate. <b>rusticus</b>                  |                       |
| Antennae (♂) not serrate, fourth and fifth ventrals foveate. <b>foveiventris</b>                  |                       |
| 7. Pubescence sparser, punctuation less close, elytra not tuberculate. <b>futilis</b>             |                       |
| Pubescence denser, punctuation closer, elytra finely subtuberculate.                              |                       |
|   | <b>grisellus</b>      |

***Attalus serraticornis*** new species

Rather stout, very little widened posteriorly in either sex; pale red, the head varying from entirely red to black with the mouth red; prothorax with or without a median black stripe, elytra each with a small, black basal spot not reaching the suture, and a subapical one attaining the side margin but not the suture, the basal spots sometimes lacking. Head and thorax moderately shining, elytra dull, pale pubescence very fine and short, the few erect black hairs on the elytra very short and inconspicuous. Head subequal to the thorax in width, the latter transversely oval, both very minutely, sparsely punctulate. Antennae black, more or less pale at base, strongly serrate and setose in the male, joints three to six as wide as long; in the female shorter and narrower, but distinctly serrate, joints four to ten as wide as long. Elytra finely and feebly, but rather closely, punctate. Metasternum black, ventral segments black in the male, red in the female, the membranous margins of the segments pale—as usual. In the type the terminal segment is pale, but in a second male is black. Legs red, the hind thighs dusky at tip. Length 2.5 mm.

Southern California: Palm Springs and Old Beach on the border of the Colorado Desert, April, (Fenyès): New Mexico; Alamogordo: Texas—without specific locality. The type is a male from Palm Springs, California.

The antennae are more strongly serrate than in any other of our species of *Attalus*. In the male the tip of the pygidium is broadly rounded, in the female narrower and subtruncate. The last ventral of the male is in all examples unusually and widely exposed and is more deeply, roundly emarginate and impressed than usual.

***Attalus dimidiatus*** new species

Moderately elongate, widened posteriorly, head and thorax strongly shining, elytra moderately so. Head (♂) rufous anteriorly, vertex and occiput black; thorax rufous with black median stripe, elytra yellow in basal half, apical half black; metasternum and abdomen black, legs red, hind thighs dusky. Head as wide as the thorax, the latter suboval, wider than long, both polished and subimpunctate. Antennae black, pale at base, narrowly serrate, all the joints longer than wide, the outer ones nearly or quite twice as long as wide, Elytra impunctate or very nearly so. Length 1.9 to 2.2 mm.

Southern California: Old Beach (Colorado Desert); one pair collected by Dr. Fenyès.

The type described above is the male; the female differs in having the head, thorax and legs entirely rufous, the antennae a little shorter and scarcely serrate; head and thorax wider, the eyes relatively smaller, the pygidium more broadly rounded at

tip. There is scarcely a sign of pubescence—except for the few scattered very short, erect, black hairs, and from the fact that the integuments are virtually impunctate, I judge this is the natural condition. The color of the elytra—half black, half yellow—is quite different from any of our other species.

**Attalus semirubidus** new species

Form moderate, upper surface shining, head and thorax red, the former with occiput black, elytra greenish black, apices narrowly red. Antennae feebly serrate in the male, joints two to six as wide as long, seven to ten becoming just perceptibly longer than wide. Head wider than long, but little narrower than the thorax, the latter transverse, rather strongly rounded at sides, base broadly rounded, apex straighter, both head and thorax minutely, feebly, sparsely punctulate. Elytra rather coarsely punctate and with numerous rather long, semi-erect, black setae, the recumbent pubescence very fine, short and sparse. Body beneath red, the metasternum black; legs red, the front and middle tibiae and tarsi dusky, hind tibiae and tarsi blackish. Length 2.2 mm.

Alabama: Mobile (Loding).

The type and only specimen at hand is a male. The elytra are scarcely dilated apically; the apical red margin extends forward very narrowly and diffusely along the sides to about the middle. This species differs from all previously described in its color arrangement, but may for the present be placed near *melanopterus*.

**Attalus demissus** new species

Moderately elongate, head and thorax distinctly shining, elytra less shining, vestiture much as usual, the erect, black setae of the elytra of moderate length. Head black, epistoma pale; thorax entirely black or with the reflexed margin around the hind angles pallescent; elytra black, with the outer margins tip and suture (except at base) narrowly rufous. Body beneath and legs black. Antennae (♂) more than half the length of the body, feebly serrate, the intermediate joints twice as long as wide; (♀) shorter, joints one-half longer than wide. Head as long as, or slightly longer than wide, not much narrower than the thorax, the latter rather narrow, a little wider than long in the male, as long as wide in the female, sides parallel and feebly arcuate, surface minutely and sparsely punctate. Elytra a little wider behind in the male, more dilated apically in the female, surface feebly, finely punctate. Length 2.3 to 2.5 mm.

Colorado: Glenwood Springs, July, (Fenyès).

A single pair, of which the male is taken as the type. In the length of the head this species approaches *oregonensis*, and should probably stand between that species and those with broader

heads. The black abdomen and legs will separate it at once from the long-headed species already described, and the relatively narrow thorax and head, and more elongate male antennae will separate it from *difficilis*, to which it bears a general resemblance.

***Attalus dilutimargo* new species**

Shining, black, elytra pubescent, mouth pale, the narrow reflexed edge around the base of the thorax dull testaceous, and the lateral and sutural edges of the elytra narrowly, diffusely paler; pubescence fine, sparse and inconspicuous, the few erect setae also unusually fine and visible only in profile; punctuation throughout sparse and minute, indistinct upon the elytra. Antennae ( $\sigma^7$ ) but little shorter than half the length of the body, not serrate, brownish piceous, basal joints indefinitely paler, joints three to eleven longer than wide, the outer ones more distinctly so. In the female the antennae scarcely pass the base of the thorax, joints scarcely longer than wide. Head as wide as the thorax, the latter transverse, sides moderately rounded. Elytra moderately widened behind in both sexes. Body beneath black; legs piceous, tibiae and tarsi—more especially of the four anterior feet—paler. Length 1.5 to 1.7 mm.

Arizona: Huachuca Mountains, May 3, (Mr. Clemence).

A single pair, of which the male is the type.

This very small species is apparently nearest to the California *lobulatus*, but the pale margins of the latter are broader and sharply defined, and on the elytra extend around the elytral apex.

***Attalus tuberculifrons* new species**

Moderately elongate, feebly shining, black, head—except the occiput—and the entire limb of the thorax narrowly rufo-testaceous, side and apical margins of elytra very narrowly yellow. Antennae ( $\sigma^7$ ) rather short, not serrate, rufo-testaceous, outer joints slightly darker, joints three to five a little stouter, following joints a little longer than wide. Head slightly wider than the thorax, front bi-impressed, the impressions separated by an elongate tuberculi-form prominence; surface finely alutaceous and with minute scattered punctures. Thorax strongly transverse, surface similarly alutaceous and punctulate; the pale margin widened a little at the hind angles, extremely narrow along the apex, disk with faint greenish lustre. Elytra feebly widened apically, surface feebly rugulose and minutely, obsoletely punctulate. Body beneath black; front and middle legs rufo-testaceous, the upper sides of the femora black; hind legs black with tibiae and tarsi brownish. Length 2 mm.

Arizona: Santa Rita Mountains, April 13, a single male.

A small species of the general aspect of *basalis* LeConte, but less shining and with frontal tubercle. The pubescence is pale, semi-erect and moderately plentiful, though fine and inconspicuous, and without longer erect setae. The last joint of the maxillary palpi is less pointed than usual, the tip being rather widely truncate.

**Attalus atripennis** new species

Form short and broad, moderately shining, subimpunctate and subglabrous, the pubescence very sparse, fine short and suberect. Head, thorax, antennae and legs rufo-testaceous, the outer joints of the antennae dusky, coxae and base of hind thighs blackish; elytra, metasternum and abdomen, black. Antennae (♀) scarcely passing the base of the thorax, not serrate, joints a little longer than wide. Head wider than long, thorax strongly transverse, about one-half wider than long, elytra moderately widened apically. Length 2.5 mm.

Arizona: Santa Rita Mountains, (Snow).

The type and only specimen before me is a female. It is evidently allied to *melanopterus*, but the latter has the abdomen pale, the thorax less strongly transverse and the antennae a little stouter. In *melanopterus* the hind femora are pale at base and blackish apically.

**Attalus glabrellus** new species

Form rather stout, distinctly shining throughout, nearly glabrous and subimpunctate. Black, thorax typically with a rufous spot at the hind angles, varying to entirely black, or with the sides broadly rufous. Head broad, epistomal margin pale. Antennae (♂) scarcely half as long as the body, scarcely serrate, basal joints more or less pale, intermediate joints a little longer than wide. Thorax transverse, subtruncate in front, broadly rounded behind. Elytra gradually wider behind in the male, more strongly dilated posteriorly in the female, surface minutely subrugulose. Legs black, the front tibiae and tarsi more or less piceo-testaceous. Length 1.75 to 2.25 mm.

California: Pomona (type ♂), Pasadena, Claremont, Azusa, San Diego, Mount Wilson, San Bernardino Mountains, Kern County, Santa Clara County, Marin County.

An abundant species in Southern California. A form taken by the writer at Williams, Arizona, is very similar, but in this the pubescence and punctuation are not so nearly obsolete and the legs differ a little in color; quite likely no more than a geographical race. This species is quite closely allied to *lecontei* Champion (*basalis* LeConte), but I feel confident they are not identical. In the type of the latter the thorax is finely but distinctly, numerous punctate, the base margined with yellow, and the legs, except the hind femora in part, are pale; it was described from the desert region along the Colorado River.

**Attalus rusticus** new species

Moderately elongate, a little wider behind, brownish piceous to dull black, lateral and basal margins of thorax rufous. Head feebly shining, thorax more

evidently so, elytra opaque; fine, pale, recumbent pubescence quite evident, mostly transversely directed on the disk, erect setae rather short but distinct in profile. Head nearly as wide as the prothorax, black, epistoma more or less pale. Antennae in the male narrowly serrate, joints three to ten one-third to three-fourths longer than wide; in the female scarcely serrate, joints three to ten nearly equal in length and about one-half longer than wide. Thorax transverse, broadly oval, with the usual scattered minute punctures. Elytra at base slightly wider than the thorax, fully twice as long as wide, surface finely, feebly, rather closely punctulate and feebly subrugulose. Body beneath blackish, legs brownish piceous to black, femora indefinitely paler at base in some examples. Last dorsal segment of abdomen with a shallow notch at apex in both sexes; fifth ventral of male with a smooth, transversely oval fovea each side of the middle and near its posterior margin. Length 2.5 to 3 mm.

Southern Arizona. The type—a male, and one female were taken at Pearce, Cochise County, May 19, by Mr. V. L. Clemence.

With these I place, without hesitation, two female examples from the Dragoon Mountains and Santa Rita Mountains, also taken by Mr. Clemence. In the latter the thorax is entirely black, except for a small rufous spot at the hind angles, while in the Dragoon Mountains one it is yellow with a black discal spot. The notched apex of the last dorsal segment is an unusual character, still more pronounced in the following species, but not elsewhere noticed by me. The ventral foveae in this and the following species suggest a relationship with *Tanaops*, but the narrow elongate lobe of the second joint of the anterior male tarsi is typical of *Attalus*.

***Attalus foveiventris*** new species

Black, elytra with greenish luster, thorax red with black discal space of variable size. Head and thorax distinctly shining, elytra only moderately so, vestiture as in the preceding, the black setae rather more conspicuous. Head nearly as wide as the thorax, black, epistoma in great part pale. Antennae black, not serrate, joints three to ten subparallel and nearly twice as long as wide in the male, in the female smaller and with the joints less elongate, but evidently longer than wide. Thorax transverse, sides rather strongly rounded, punctulate and pubescent as usual. Elytra slightly wider at base than the thorax, strongly dilated apically in both sexes, punctuation and vestiture nearly as in the preceding species. Body beneath black, the last three ventrals red in the male. Legs entirely black. Last dorsal segment of abdomen distinctly notched at tip in both sexes, rather deeply so in the male. Male with fourth and fifth ventral segments foveate each side of the middle. Length, 2.5 mm.

Arizona: Nogales. A single pair collected by Nunenmacher.



Somewhat similar in general aspect to the preceding, but with many points of difference, notably the non-serrate antennae, dilated elytra and ventral foveae.

**Attalus futilis** new species

Black with faint greenish luster, moderately shining, sparsely setose, and with rather plentiful, fine, pale pubescence. The epistoma, margin of thorax very narrowly at the hind angles, and the basal three joints of the antennae in part, are pale. Antennae ( $\sigma^7$ ) scarcely serrate, attaining the elytral humeri, joints three to eleven evidently longer than wide. Head moderately broad but evidently narrower than the thorax, the latter transversely oval, elytra gradually, moderately dilated apically, upper surface throughout very finely, but distinctly and numerous punctate. Body beneath black, the last three ventral segments narrowly pale at sides in type, but not evidently so in other examples. Legs black. Length 1.6 to 2 mm.

New Mexico: Pecos, June to July, (Cockerell), three males, two females.

In one male the basal six joints of the antennae are pale beneath, as are the front and middle legs in great part. This small and inconspicuous species would fall near *morulus* in Horn's table; the latter is, however, much larger, less pubescent, less evidently punctate and with longer, stouter antennae.

**Attalus grisellus** new species

Very similar to the preceding, differing as follows. Pale pubescence more abundant, giving a grayish aspect, the punctuation also a little stronger and closer, the surface in consequence less shining. The pale spot at the hind angles of the thorax is larger, and the elytra have the appearance of being finely, sparsely subtuberculate, not at all so in *futilis*. Length 2 to 2.4 mm.

New Mexico: Alamogordo, April and May, (Viereck and Rehn). Type no. 8123, Acad. Nat. Sci. Phila.

It is possible that this species is no more than a variety or race of the preceding; the nine examples before me are, however, quite constant in showing the differences mentioned. The type, a male, is returned to the Academy of Nat. Sciences, Philadelphia; paratypes are in my own collection.

**Attalus rostratus** Horn

The unique type is a female, the head very elongate, the elytra opaque and subrugose, perhaps abnormally so. It is more than likely that the male will show this to be a *Tanaops*, in which case it may prove to be the *angusticeps* of the present paper, and this, as already stated, may really be the *apicalis* of Moschulsky.

**Attalus rufomarginatus** Motschulsky

Specimens in the LeConte collection bearing this label—in Horn's handwriting—are *Tanaops abdominalis*, as are examples in the writer's collection that were long ago identified as *rufomarginatus* by Horn. From Motschulsky's description there can be no doubt that *rufomarginatus* is a true *Attalus*, of which I have at least three species of the color type indicated by Motschulsky's figure; one of these is pretty sure to be the real thing.

**Attalus basalis** LeConte

According to Champion, the *Anthocomus basalis* of Erichson is an *Attalus*, and therefore LeConte's species requires a new name; he proposes to call it *lecontei*.<sup>1</sup>

**Attalus zebraicus** Blatchley

This is suspiciously close to *varians* Horn, but more specimens are needed to determine the relationship.

**Attalus parallelus** Horn

This cannot be separated from *rufiventris* Horn.

**MALACHIUS** Fabricius**Malachius spinipennis** Horn

This name being preoccupied by Germar, for a European species, the name *hornii* is proposed in its stead.

<sup>1</sup> See Trans. Ent. Soc. London, 1914, p. 60.